2/19

#1

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/047,257

DATE: 02/28/2002
TIME: 12:47:47

Input Set : **A:\CHO_D06.APP.txt**
Output Set: **N:\CRF3\02282002\J047257.raw**

```
 3 <110> APPLICANT: Cho, Myung-Sam
 4        Chan, Sham-Yuen
 5        Kelsey, William
 6        Yee, Helena
 8 <120> TITLE OF INVENTION: Expression System for Factor VIII
10 <130> FILE REFERENCE: MSB-7255.2
12 <140> CURRENT APPLICATION NUMBER: US/10/047,257       C-->
13 <141> CURRENT FILING DATE: 2002-01-15                 C-->
15 <160> NUMBER OF SEQ ID NOS: 2
17 <170> SOFTWARE: PatentIn Ver. 2.0
19 <210> SEQ ID NO: 1
20 <211> LENGTH: 1438
21 <212> TYPE: PRT
22 <213> ORGANISM: Artificial Sequence
24 <220> FEATURE:
26 <223> OTHER INFORMATION: Description of Artificial Sequence: Derived from
27        human factor VIII sequence
29 <400> SEQUENCE: 1
31 Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser Trp Asp Tyr
32   1               5                  10                  15
34 Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg Phe Pro Pro
35             20                  25                  30
37 Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val Tyr Lys Lys
38             35                  40                  45
40 Thr Leu Phe Val Glu Phe Thr Val His Leu Phe Asn Ile Ala Lys Pro
41         50                  55                  60
43 Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln Ala Glu Val
44 65                  70                  75                  80
46 Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser His Pro Val
47                 85                  90                  95
49 Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser Glu Gly Ala
50             100                 105                 110
52 Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp Asp Lys Val
53             115                 120                 125
55 Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu Lys Glu Asn
56         130                 135                 140
58 Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser Tyr Leu Ser
59 145                 150                 155                 160
61 His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile Gly Ala Leu
62             165                 170                 175
64 Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr Gln Thr Leu
65             180                 185                 190
67 His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly Lys Ser Trp
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/047,257

DATE: 02/28/2002
TIME: 12:47:47

Input Set : A:\CHO_D06.APP.txt
Output Set: N:\CRF3\02282002\J047257.raw

```
68          195                 200                 205
70 His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp Ala Ala Ser
71     210              215                 220
73 Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr Val Asn Arg
74 225              230                 235                 240
76 Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val Tyr Trp His
77              245                 250                 255
79 Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile Phe Leu Glu
80         260                 265                 270
82 Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser Leu Glu Ile
83         275                 280                 285
85 Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met Asp Leu Gly
86     290                 295                 300
88 Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His Asp Gly Met
89 305                 310                 315                 320
91 Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro Gln Leu Arg
92              325                 330                 335
94 Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp Leu Thr Asp
95         340                 345                 350
97 Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser Pro Ser Phe
98         355                 360                 365
100 Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr Trp Val His
101     370                 375                 380
103 Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro Leu Val Leu
104 385                 390                 395                 400
106 Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn Asn Gly Pro
107              405                 410                 415
109 Gln Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met Ala Tyr Thr
110         420                 425                 430
112 Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu Ser Gly Ile
113         435                 440                 445
115 Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu Leu Ile Ile
116     450                 455                 460
118 Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro His Gly Ile
119 465                 470                 475                 480
121 Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys Gly Val Lys
122              485                 490                 495
124 His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe Lys Tyr Lys
125         500                 505                 510
127 Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp Pro Arg Cys
128         515                 520                 525
130 Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg Asp Leu Ala
131     530                 535                 540
133 Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu Ser Val Asp
134 545                 550                 555                 560
136 Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val Ile Leu Phe
137              565                 570                 575
139 Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu Asn Ile Gln
140         580                 585                 590
```

RAW SEQUENCE LISTING   DATE: 02/28/2002
PATENT APPLICATION: US/10/047,257   TIME: 12:47:47

Input Set : A:\CHO_D06.APP.txt
Output Set: N:\CRF3\02282002\J047257.raw

```
142 Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp Pro Glu Phe
143         595             600             605
145 Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val Phe Asp Ser
146         610             615             620
148 Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp Tyr Ile Leu
149 625             630             635             640
151 Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe Ser Gly Tyr
152             645             650             655
154 Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr Leu Phe Pro
155         660             665             670
157 Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro Gly Leu Trp
158         675             680             685
160 Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly Met Thr Ala
161         690             695             700
163 Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp Tyr Tyr Glu
164 705             710             715             720
166 Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys Asn Asn Ala
167             725             730             735
169 Ile Glu Pro Arg Ser Phe Ser Gln Asn Pro Pro Val Leu Lys Arg His
170             740             745             750
172 Gln Arg Glu Ile Thr Arg Thr Thr Leu Gln Ser Asp Gln Glu Glu Ile
173         755             760             765
175 Asp Tyr Asp Asp Thr Ile Ser Val Glu Met Lys Lys Glu Asp Phe Asp
176         770             775             780
178 Ile Tyr Asp Glu Asp Glu Asn Gln Ser Pro Arg Ser Phe Gln Lys Lys
179 785             790             795             800
181 Thr Arg His Tyr Phe Ile Ala Ala Val Glu Arg Leu Trp Asp Tyr Gly
182             805             810             815
184 Met Ser Ser Ser Pro His Val Leu Arg Asn Arg Ala Gln Ser Gly Ser
185             820             825             830
187 Val Pro Gln Phe Lys Lys Val Val Phe Gln Glu Phe Thr Asp Gly Ser
188         835             840             845
190 Phe Thr Gln Pro Leu Tyr Arg Gly Glu Leu Asn Glu His Leu Gly Leu
191         850             855             860
193 Leu Gly Pro Tyr Ile Arg Ala Glu Val Glu Asp Asn Ile Met Val Thr
194 865             870             875             880
196 Phe Arg Asn Gln Ala Ser Arg Pro Tyr Ser Phe Tyr Ser Ser Leu Ile
197             885             890             895
199 Ser Tyr Glu Glu Asp Gln Arg Gln Gly Ala Glu Pro Arg Lys Asn Phe
200             900             905             910
202 Val Lys Pro Asn Glu Thr Lys Thr Tyr Phe Trp Lys Val Gln His His
203         915             920             925
205 Met Ala Pro Thr Lys Asp Glu Phe Asp Cys Lys Ala Trp Ala Tyr Phe
206         930             935             940
208 Ser Asp Val Asp Leu Glu Lys Asp Val His Ser Gly Leu Ile Gly Pro
209 945             950             955             960
211 Leu Leu Val Cys His Thr Asn Thr Leu Asn Pro Ala His Gly Arg Gln
212             965             970             975
214 Val Thr Val Gln Glu Phe Ala Leu Phe Phe Thr Ile Phe Asp Glu Thr
```

RAW SEQUENCE LISTING   DATE: 02/28/2002
PATENT APPLICATION: US/10/047,257   TIME: 12:47:47

Input Set : A:\CHO_D06.APP.txt
Output Set: N:\CRF3\02282002\J047257.raw

```
215            980              985              990
217 Lys Ser Trp Tyr Phe Thr Glu Asn Met Glu Arg Asn Cys Arg Ala Pro
218         995             1000             1005
220 Cys Asn Ile Gln Met Glu Asp Pro Thr Phe Lys Glu Asn Tyr Arg Phe
221    1010            1015  ·          1020
223 His Ala Ile Asn Gly Tyr Ile Met Asp Thr Leu Pro Gly Leu Val Met
224 1025            1030             1035             1040
226 Ala Gln Asp Gln Arg Ile Arg Trp Tyr Leu Leu Ser Met Gly Ser Asn
227             1045             1050             1055
229 Glu Asn Ile His Ser Ile His Phe Ser Gly His Val Phe Thr Val Arg
230         1060             1065             1070
232 Lys Lys Glu Glu Tyr Lys Met Ala Leu Tyr Asn Leu Tyr Pro Gly Val
233         1075            1080             1085
235 Phe Glu Thr Val Glu Met Leu Pro Ser Lys Ala Gly Ile Trp Arg Val
236    1090            1095             1100
238 Glu Cys Leu Ile Gly Glu His Leu His Ala Gly Met Ser Thr Leu Phe
239 1105            1110             1115             1120
241 Leu Val Tyr Ser Asn Lys Cys Gln Thr Pro Leu Gly Met Ala Ser Gly
242             1125             1130             1135
244 His Ile Arg Asp Phe Gln Ile Thr Ala Ser Gly Gln Tyr Gly Gln Trp
245         1140            1145             1150
247 Ala Pro Lys Leu Ala Arg Leu His Tyr Ser Gly Ser Ile Asn Ala Trp
248         1155            1160             1165
250 Ser Thr Lys Glu Pro Phe Ser Trp Ile Lys Val Asp Leu Leu Ala Pro
251    1170            1175             1180
253 Met Ile Ile His Gly Ile Lys Thr Gln Gly Ala Arg Gln Lys Phe Ser
254 1185            1190             1195             1200
256 Ser Leu Tyr Ile Ser Gln Phe Ile Ile Met Tyr Ser Leu Asp Gly Lys
257             1205            1210             1215
259 Lys Trp Gln Thr Tyr Arg Gly Asn Ser Thr Gly Thr Leu Met Val Phe
260         1220            1225             1230
262 Phe Gly Asn Val Asp Ser Ser Gly Ile Lys His Asn Ile Phe Asn Pro
263         1235            1240             1245
265 Pro Ile Ile Ala Arg Tyr Ile Arg Leu His Pro Thr His Tyr Ser Ile
266    1250            1255             1260
268 Arg Ser Thr Leu Arg Met Glu Leu Met Gly Cys Asp Leu Asn Ser Cys
269 1265            1270             1275             1280
271 Ser Met Pro Leu Gly Met Glu Ser Lys Ala Ile Ser Asp Ala Gln Ile
272             1285            1290             1295
274 Thr Ala Ser Ser Tyr Phe Thr Asn Met Phe Ala Thr Trp Ser Pro Ser
275         1300            1305             1310
277 Lys Ala Arg Leu His Leu Gln Gly Arg Ser Asn Ala Trp Arg Pro Gln
278         1315            1320             1325
280 Val Asn Asn Pro Lys Glu Trp Leu Gln Val Asp Phe Gln Lys Thr Met
281    1330            1335             1340
283 Lys Val Thr Gly Val Thr Thr Gln Gly Val Lys Ser Leu Leu Thr Ser
284 1345            1350             1355             1360
286 Met Tyr Val Lys Glu Phe Leu Ile Ser Ser Ser Gln Asp Gly His Gln
287             1365            1370             1375
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/047,257

DATE: 02/28/2002
TIME: 12:47:47

Input Set : **A:\CHO_D06.APP.txt**
Output Set: **N:\CRF3\02282002\J047257.raw**

```
289 Trp Thr Leu Phe Phe Gln Asn Gly Lys Val Lys Val Phe Gln Gly Asn
290           1380              1385              1390
292 Gln Asp Ser Phe Thr Pro Val Val Asn Ser Leu Asp Pro Pro Leu Leu
293        1395            1400              1405
295 Thr Arg Tyr Leu Arg Ile His Pro Gln Ser Trp Val His Gln Ile Ala
296    1410            1415              1420
298 Leu Arg Met Glu Val Leu Gly Cys Glu Ala Gln Asp Leu Tyr
299 1425           1430           1435
302 <210> SEQ ID NO: 2
303 <211> LENGTH: 402
304 <212> TYPE: DNA
305 <213> ORGANISM: Artificial Sequence
307 <220> FEATURE:
308 <223> OTHER INFORMATION: Description of Artificial Sequence:Derived from
309       Epstein-Barr virus sequence
311 <400> SEQUENCE: 2
312 ggcaatggag cgtgacgaag ggccccaggg ctgaccccgg caaacgtgac ccggggctcc 60
313 ggggtgaccc aggcaagcgt ggccaagggg cccgtgggtg acacaggcaa ccctgacaaa 120
314 ggccccccag gaaagacccc cggggggcat cgggggggtg ttggcgggtc atggggggggg 180
315 cgggtcatgc cgcgcattcc tggaaaaagt ggaggggggcg tggccttccc cccgcggccc 240
316 cctagcccccc ccgcagagag cggcgcaacg gcgggcgagc ggcgggggggt cggggtccgc 300
317 gggctccggg ggctgcgggc ggtggatggc ggctggcgtt ccggggatcg gggggggggtc 360
318 ggggggcgct gcgcgggcgc agccatgcgt gaccgtgatg ag                    402
```

VERIFICATION SUMMARY
PATENT APPLICATION: US/10/047,257

DATE: 02/28/2002
TIME: 12:47:48

Input Set : **A:\CHO_D06.APP.txt**
Output Set: **N:\CRF3\02282002\J047257.raw**

L:12 M:270 C: Current Application Number differs, Replaced Application Number
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date